

WHAT IS CLAIMED IS:

1. A noncontact type signal transmission device comprising:

a first member;

5 a second member configured to move along a predetermined orbit with respect to said first member;

at least one light-emitting device mounted on one of said first and second members;

10 at least one light-receiving device mounted on the other of said first and second members; and

at least one beam condensing device disposed between said light-emitting device and said light-receiving device and having a function of condensing light from said light-emitting device in a direction
15 substantially perpendicular to the orbit.

2. A device according to claim 1, wherein said beam condensing device is mounted on the other of said first and second members or said light-receiving device.

20 3. A device according to claim 1, wherein said beam condensing device mounted on one of said first and second members or said light-receiving device.

4. A device according to claim 1, wherein said beam condensing device is disposed at a position closer
25 to said light-emitting device than to said light-receiving device.

5. A device according to claim 1, wherein the

light condensed by said beam condensing device strikes said light-receiving device within a width substantially equal to a width of an effective light-receiving surface of said light-receiving device.

5 6. A device according to claim 1, wherein the light condensed by said beam condensing device strikes said light-receiving device within a width substantially larger than a width of an effective light-receiving surface of said light-receiving device.

10 7. A device according to claim 1, wherein said light-receiving device is disposed at a position closer to said beam condensing device than a position to which the light is made to converge by said beam condensing device.

15 8. A device according to claim 1, wherein said light-receiving device is disposed at a position farther from said beam condensing device than a position to which the light is made to converge by said beam condensing device.

20 9. A device according to claim 1, wherein said beam condensing device is a cylindrical lens, Fresnel lens, or curved mirror.

25 10. A device according to claim 1, wherein said beam condensing device does not have a function of condensing light from said light-emitting device in a direction substantially parallel to the orbit.

11. A device according to claim 1, wherein said

beam condensing means has a function of diffusing light from said light-emitting device in a direction substantially parallel to the orbit.

5 12. A device according to claim 1, further comprising:

a unit for coding a transmission signal; and
a driving unit for driving said light-emitting device in accordance with the coded transmission signal to turn on/off said light-emitting device in accordance with the coded transmission signal.

10 13. A device according to claim 1, wherein said light-emitting device comprises a plurality of light-emitting devices, and said device further comprises a unit for coding a transmission signal, a distributor for distributing the coded transmission signal to obtain a plurality of transmission signals, and a plurality of driving units for driving said plurality of light-emitting devices in accordance with the plurality of transmission signals.

20 14. An X-ray computed tomography apparatus comprising:

an X-ray tube for irradiating an object with X-rays;
a detector for detecting X-rays transmitted through the object;
25 a noncontact type signal transmission device for transmitting a signal output from said detector;

a unit for generating image data on the basis of the signal transmitted through said noncontact type signal transmission device; and

a unit for displaying the image data,

5 wherein said noncontact type signal transmission device comprises:

a stationary portion;

a rotating ring disposed inside said stationary portion;

10 a plurality of light-emitting devices discretely arranged on an outer surface of said rotating ring;

a plurality of light-receiving devices discretely arranged on an inner surface of said stationary portion; and

15 a plurality of beam condensing devices arranged between said light-emitting devices and said light-receiving devices and having the function of condensing light in a direction parallel to a rotation axis of the said rotating ring.

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